USGS

WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2003MT11B

Title: Competitive interactions between the invasive Potamopyrgus antipodarum and Baetid mayflies: temporal variation and community-level consequences

Project Type: Research

Focus Categories: Ecology, Surface Water, Conservation

Keywords: Potamopyrgus antipodarum; New Zealand mud snail; invasive species; competitive interactions; Intermountain West

Start Date: 05/01/2003

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Matching Funds: $22392.00

Congressional District: At-large

Principal Investigators: Kerans, Billie

Abstract: Nonindigenous populations of the New Zealand Mud Snail, Potamopyrgus antipodarum, exist in many freshwater ecosystems of the western United States including Darlinton Ditch of the Madison River drainage, southwestern Montana. The mud snail=s high densities, feeding ecology, and reproductive biology suggest that it will compete with other grazing macroinvertebrates. Furthermore, densities of many taxa decrease when sympatric with P. antipodarum in Darlinton Ditch suggesting either exploitation or interference competition. Periphyton biomass also decreases in the presence of P. antipodarum even at relatively low densities, further supporting the hypothesis of exploitation competition between macroinvertebrates and P. antipodarum. However, competitive interactions might be temporally variable because the observed decrease in density occurred in autumn but not in spring. Because macroinvertebrates provide an important food resource for consumers (e.g., fishes), their decreased abundance could alter other trophic levels. We plan to investigate these consequences of P. antipodarum introduction through field surveys, competition experiments and enclosure experiments. Specifically, we will focus on temporal changes in the macroinvertebrate and periphyton assemblages sympatric and allopatric with P. antipodarum; temporal differences in competition intensity between P.

antipodarum and a grazing mayfly, Baetis tricaudatis; and variation in the growth of both Oncorhynchus mykiss and Cottus bairdi in reaches of Darlinton ditch that have high and low densities of P. antipodarum.
